CBS News-STS-2 LANDING (11-14-1981)

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From Saturday, November 14th, 1981 CBS News live coverage of the landing of STS-2, the 2nd Space Shuttle mission which landed at Edwards Air-Force Base in California.
Landing at 4:23:11 P.M EST/ 1:23:11 p.m. PST
STS-2 CREW:
Commander: Joe Engle
Pilot: Dick Truly

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[Music] this is a cbs news special report [Music] the return of space shuttle two here is dan rather good afternoon fellow citizens of our space faring nation the spaceship columbia lamed by a dead fuel cell but still safely under control now is in her last orbit headed home to earth within 20 minutes or so mission control will tell astronauts joe angle and dick truly whether the weather permits them to land at edwards air force base california that's the preferred landing site or whether they must continue on to an alternative such as the white sands new mexico even with their foreshortened flight engel and truly have accomplished most of the major tests to sign their mission including separating that canadian arm and making a series of scientific observations of the earth the basic re-entry plan calls for ingle and truly to flip the columbia over a tail somewhere over the indian ocean and after doing that uh the whole idea is to fire their engines and slow the hundred and 17 five mile an hour speed of the columbia that's what i was trying to find was that speed is something over seventeen thousand miles an hour they will lose contact with mission control for about 17 minutes because of the ionization gases before regaining contact on their way toward the sun hardened desert lake landing strip at edwards air force base walter cronkite is that edwards and we go to him now for an update well dan down here at uh or out here at edwards depending on where you are i suppose when you start but out here on the west coast some 75 miles east of los angeles on the dry bed of

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east of los angeles on the dry bed of the mojave desert which is edwards air force base the problem has been weather for the last 24 hours of concern about cloud cover they want to have a look from the spacecraft at their landing obviously before coming in even if they were on instruments they'd like to know what they're doing you know that's the big story of this spacecraft they only get one shot at it it has no power of course once it comes out of orbit it's a glide all the way in 75 tons of airplane to land without power it's not been done before except the once on columbia and this will be the second shot for astronauts pilots to get a plane down under those conditions they don't have a chance once they have to look at the runway to power up again and go around again it's that one shot only and that's what makes this so dramatic the moments we're waiting for now well as a result they want to be able to look through those clouds and be able to see the runway of course before coming in the optimum uh would be of course perfectly clear whether no clouds at all the constraint according to nasa's book is 50 cloud cover they could still come in on it looks like right now we're in about as good shape as we've been lately with i would guess probably about fifty percent wouldn't you leo crop leo is with us he's a test pilot you know who works with us he comes out of rockwell aviation they build this big beast wouldn't you say it's about to five tenths now oh yes walter i think the weather's fine there's no constraint on getting in though she'd be able to see the ground from forty fifty thousand feet as they come on in the only problem we might have is this wind that's blowing about 15 knots and up at 30 000 feet it's out of the west at 90 knots so it's going to give joe a little trouble flying his ground pattern around the the hack around the landing circle and making the runway he's going to have to do that manually as a matter of fact

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do that manually as a matter of fact they just decided a little while ago that they would definitely go ahead and make a crosswind landing here at edwards now they're they had a several of course test objectives always in every one of these flights many test objectives as a matter of fact but two of the very important ones on this flight were to either test an automatic landing system from about 25 000 feet on down or to test across when landing one or the other they might have been able to do both if the wind had cooperated turns out they can only test the auto landing on one of the runways that's one way called 23 meaning it heads 230 degrees or southwest but that's the only runway that has the automatic landing equipment here at edwards at the moment if the wind had been across that runway they could have tried the automatic landing system and the other thing they want to try which is a fully a crosswind landing however the wind's not cooperating it's almost right down that 230 degree runway or grunway 23. it's right out of the southwest so they've got their choice now either they could try the auto landing and come right into the wind or they can or they can come make a crosswind landing and come in on runway 1-5 or a southeast runway heading 150 degrees they've opted for the crosswind landing as of this moment although there are a lot of experts out here at the dryden space center at edwards air force base who think that they're they're going for a pretty heavy crosswind for the first attempt at 15 miles an hour perhaps 12 it might get down that far it's quite a lot to crosswind and as leo we were saying just a little while ago that means that the pilot is going to have a pretty good a lot of work to do getting in he's going to have to avoid that you were mentioning leo blowing a tire as a matter of fact well

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blowing a tire as a matter of fact well there's always a possibility of blowing a tire in any landing a little more so on a crosswind landing but joe engel is one of the top pilots he's probably uh astronauts are all good pilots but joe has had some really good flight experience and if anyone can get it in i'm sure he's going to be able to do it it's probably his major problem is going to be flying around the hack around the landing approach with these high winds at altitude the wind is really tremendous out there 90 knots at 30 000 feet and of course he doesn't have any power as we keep saying it's all it's all a glide and that makes it very difficult for him he's got all the automatic equipment all the ground help but it's going to be a pilot's problem getting that plane in this morning they have a goal for the deorbit burn which will come in about another uh oh it's about another 10 minutes from now 15 minutes something like that right now we go back to dan rather dan thank you very much walter we'll be coming back out there of course often and soon as we go through the afternoon and the landing of the space shuttle two john young who landed the shuttle first flight has flown over the dry lake landing strip to check the weather and to be sure that all the landmarks uh are visible to guide the shuttle into the landing joe engel as you mentioned we'll fly this manually for the landing they're expecting large crowds out there at edwards air force base perhaps as many as one hundred thousand had arrived by dawn today our cbs news coverage of the coming home of space shuttle 2 will continue after these messages and the crew of columbia has a go for the deorbit burn they're maneuvering the spaceship now in order to fly upside down and backwards as is necessary to re-enter the earth's atmosphere even though this flight has been shorter than planned a great deal of important work has been done morton dean in houston reports now on the highlights of

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houston reports now on the highlights of this flight of space shuttle 2. on november 4th the columbia was just about half a minute from making history half a minute from making the first return flight to space when the clock stops t minus 31 seconds and we have held at the t minus 31 second point two hours later the bad news there has been a determination made that we are going to scrub for the day an oil filter had clogged up some lubricating oil and a power system had become contaminated the flight was postponed eight days a new date and a new problem we had two random failures in the same portion of an mdm a third one was flown in from the west coast it arrived here at the kennedy space center at about nine o'clock the launch was delayed from early morning to mid morning it was astronaut dick truly's birthday his 44th the astronauts did not have their usual pre-flight breakfast they had a pre-flight birthday party the icing on the cake would come a bit later when the big candles were lighted at plagued last problems the mission would achieve many of its goals but it would come home early trouble in a fuel cell creating the possibility of an explosion the cell was drained and made safe and it is literally dead cannot be restarted so the rest of sds-2 will be accomplished on two fuel cells but nasa didn't want to take the risk of running a five-day mission on only two fuel cells okay you get to hear the bad news one more time then we're running a minimum mission and you'll be coming in tomorrow oh okay that's not so good the astronauts quicken the pace of their

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astronauts quicken the pace of their activities to achieve as many of the major test objectives as possible during the shortened mission last evening engel and truly had a long distance call from a visitor to mission control in houston i care and again god bless you both and all of us here are watching with great pride morton dean cbs news johnson space center houston and that last picture that you saw on videotape was that canadian arm which was one of the major experiments conducted already conducted during a flight of space shuttle to that canadian arm up and out of the open payload area from the space shuttle and of course in the background earth with me at our cbs news studios here in new york today is bonnie dunbar astronaut who's been helping us with this second of the space shuttle missions bonnie using our model and very quickly i think perhaps we can use it to explain to people what's happening to the space ship at the moment they have the go for the dr burn they're now going to come back down to earth hopefully safely they turn it over and fly it upside down and backwards oh that's true what we're trying to do is reduce our orbital velocity so we slow down enough to come back in the earth's atmosphere if we pretend our velocity is that way we've turned around we're we are firing these orbital maneuvering system engines there are two of them uh reducing our speed only about 300 feet per second after we've acquired that speed at our target speed will then turn over and actually enter the earth's atmosphere at about this attitude you'll hear the phrase entry interface is defined as 400 000 feet that point at which we start sensing the earth's atmosphere so this angle here with the direction of travel and the nose is about 40 degrees it's called our angle of attack and this is how we'll enter the earth's atmosphere and generate a good portion of the heat on the bottom of the and that's the reason that these black tiles are on the spacecraft at the moment is flying

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the spacecraft at the moment is flying in this direction upside down and backwards as it comes through as you explain it comes down through near the earth's atmosphere over and this way and the tiles that have to absorb so much of that friction from the atmosphere are under here now you're an engineer uh expert in tiles were you concerned that spacecraft lost a few tiles the last time i think that most of us were very confident in the thermal protection system and its design its ability to uh you know accommodate the amount of heat that you see on reentry there's always a concern that you've tested enough when we designed our test apparatus and our procedures we took these tiles through a hundred missions again it's a hundred mission reusable vehicle and we subjected them to temperatures in excess of 2300 degrees fahrenheit for that amount of time we had a lot of confidence i think that the possibility of losing a tile was very remote and in some areas it may not make a difference in other areas that were critical over the next let's say 20 minutes when is the most dangerous time for the astronauts well of course there are some times would be more critical than others but in terms of heating we'll hear of entry interface uh probably uh some 20 minutes before landing at the time that we entered blackout shortly after that we'll enter peak heating as well about 320 000 feet and you'll see uh this is when the orbiter as it comes in the crew will see a pink glow over the top of the nose and these tiles under here we'll see about 2300 degrees fahrenheit and the nose in fact may get up to about 2500 degrees fahrenheit and this is where about 10 minutes of peak heating in terms of the thermal environment is critical cbs news coverage of the return of the space shuttle will continue in just a moment new instructions from the space controllers to the spacecraft and the

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controllers to the spacecraft and the astronauts change in runways as we came on the air you heard leo krupp and walter cronkite saying at edwards air force base that the wind was up out there and leo krupp veteran test pilot who's helped us so many of these broadcasts expressed at least privately some of his concerns about the runway they're going to use now they've changed the runway bonnie dunbar our astronaut friend here in new york with us what does that mean and does it mean very much for the astronauts they've changed the runway at edwards air force base well i came in in the middle of the explanation i'm sure is because of winds i heard runway 2-3 listen for you know confirmation of that but really all it means is that on the dedicated displays on board is that joe engel just put in 2-3 as the runway and guidance and navigation will take care of that so not much difference not much different what are the chances that they will now change the landing site from edwards air force base to say white sands new mexico very little on the basis of that you think they'll come down at edwards uh it appears so at the present time now we're roughly what four four and a half minutes to the deorbit burn about uh one hour and two or three minutes from landing if all goes according to schedule that's true mort dean and astronaut paul weitz are in the 1g trainer where the crew has trained at the johnson space center in houston mark good afternoon good afternoon dan and bonnie paul you've come back from space you're up there in skylab the first skylab mission is it disconcerting for a astronaut to hear just shortly before re-entry that you've got to make a change you'll be coming in on a different runway no not in this case mort uh joe understands the rationale between the choices or what governs the choices and he knows what the objectives are going to either one of them are does that require anything different from the pilot or the commander or is it all done by machines by computers well it uh basically the the maneuvering of the vehicle the steering of it is done by the computers but the crew will type into through again through our good old keyboard here using displays on the crts the cathode ray tubes here will give instructions to the computers to

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give instructions to the computers to now go to runway 2 3 as bonnie said instead of runway 1 5. how much flying will the astronauts actually do on the way down uh this particular flight is a very busy one and that we are trying to determine what are called stability derivatives how does this stability derivatives love the terms you want to find out what the point what the shuttle can do what it does in response to aerodynamic upsets that's correct okay or uh when things don't go smoothly how does the thing fly what are its real flying characteristics how well does a corner would be an equivalent in a car so they're putting the spaceship through some unusual maneuvers uh unusual as far as the first shuttle return there are maneuvers that would not be necessary to perform the entry but they are being performed in order to get this aerodynamic data that's correct and they will not significantly affect the trajectory dan angle and truly are not sitting in their uniform similar to ours a sport jacket and tie but they are wearing reentry suits well they're the emergency escape suits that they wore at launch they're the ones that do permit them if necessary heaven forbid to survive an ejection and they can't eject up to what is it uh after a hundred thousand feet below 100 000 feet yes that's correct well there you are dan bonnie thank you very much martin dean and astronaut paul weitz in houston here in new york with uh astronaut bonnie dunbar and standing by at edwards air force base in california walter cronkite and leo krupp now where the astronauts are at the moment they have started at least one of their auxiliary power units they are just about to go into the important d orbit burn the d uh orbit burn burn time should last uh body check me on this figure about two minutes and uh 29 seconds they'll be traveling at roughly what speed per hour well in a deorbit burn uh we're close to about 18 000 miles per hour and we're not de-orbit or really reducing that much in terms of feet per second that's more familiar to me it's about

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that's more familiar to me it's about 313 feet per second in the burn i believe is about two minutes and 55 seconds that's enough of a reduction to bring us out of orbit take us down to a new orbit that if allowed to continue would be two miles minus two miles i want everyone to be able to get the picture those who went through the landing of space shuttle one remember this very well it's a it's a procedure that's been developed in the american space program over the years but uh we see there the time down to deorbit uh 45 seconds before they go into the deorbit burn that they the astronauts are flying upside down and backwards coming out of space they have to go through a perilous period a dangerous period when they lose the communications and there will be a period in which communications are out that doesn't necessarily mean that they're in any danger uh we'll explain a little bit later why that communications loss is not only necessary it simply happens but that doesn't mean they're in danger but it is a dangerous period without overstating it two lives at stake as they come out of outer space and try to enter the inner space of the earth's atmosphere that's what's about to happen seven six five seconds to go to de-orbit burn let's pick up the voices duration of that maneuver two minutes 55 seconds slowing columbian up so that it drops out of orbit for landing at edwards air force base we've started the entry interface clock here in the control center it's reading 27 minutes to entry into the earth's atmosphere for colombia we'll get a report on this the orbit burn when columbia reaches the yardy tracking station in australia we're about seven minutes away from acquisition there two days five hours fourteen minutes this is shuttle control houston

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what you're seeing is animation this is animation of what is happening with the astronauts and the spaceship columbia the first the only spacecraft ever to leave earth go into space return to earth and then go back into space the deorbit burn when it is finished and we expect it to be finished in about another how long bonnie would you say well it looks like we're about two minutes or so into it it should be very soon again these are the same engines that we used uh shortly after launch to put us into the higher orbit we're now bringing us back into a lower orbit that is 141 nautical miles by minus two nautical miles again those engines were off when the spacecraft was circling the earth that's true they're used to get them into space and then used again to get them back down out of space we're waiting for official word that the deorbit burn has been completed successfully everyone of course keeping their fingers crossed and hoping that all goes well and has gone well in this deorbit burn there's no indication that things have not gone exactly according to plan now and just to give you an idea of where we are this burn is occurring about halfway between africa and australia as soon as the astronauts come out of this de-orbit burn the spacecraft will be put into a different attitude to face that tremendous friction and heat that will come as it begins hitting the atmosphere of the earth awaiting word from the mission control communicators as to whether the deorbit burn has been successfully completed we'll pick up the crew again

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completed we'll pick up the crew again on australia at the yargody ground station those the faces and the machines at mission control in houston monitoring the spacecraft as it goes through this de-orbit burn period bonnie dunbar is it fair to say that this is one of the most dangerous periods for the astronauts on the mission i know that you and everyone at nasa keeps emphasizing that every possible safety precaution is taken but we know in the first 25 or 30 seconds of blastoff is a dangerous time for the astronauts we know that the deorbit burn is a dangerous period is it fair to say that it is the second or third most dangerous period for them i i think that would be difficult to say uh before this burn was started we checked out the systems uh we uh directionally control these engines with some gimbals and they're checked out again what a gimbal is a a method well let's let's take a hydraulically uh powered method of steering the engine again it's it's like your car you go the direction opposite of where you're pushing okay and that's what we're doing with these engines uh we've we pointed them a certain direction they're going to slow us down so we care about that but we have a lot of confidence in that i think what you're concerned about possibly is the lack of communication and we should pick that up at about entry interface minus 20 minutes and i would say that's within about a couple minutes from now we should be hearing from the astronauts again within a couple of minutes uh from now now to put uh make sure that uh perhaps even those who've stuck with us understand that it will be uh something less than an hour now before landing in edwards air force base there's much that has to be done once this deorbit burn is completed we should emphasize that the spacecraft will be landed manually this time as it was the last time that joe ingle will be at the controls of colombia as it comes down at the edwards air force base if any difficulty develops with the weather the

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difficulty develops with the weather the next probable landing site the white sands new mexico but it certainly looks like that they'll be coming down at edwards doesn't it i think that given the conditions at the present time the fact that we've got a deorbit burn that will be coming into edwards any indication that anything has gone outside the schedule at any time this afternoon no i i don't see anything i'm not aware of it sounds nominal the crew would have to be a little disappointed about coming down three days before they had planned to do so but they do have the consolation of having accomplished just about all of the experiments and the the scientific experiments as well as those of the spacecraft that they'd been put up there to to do i feel uh that just as i believe the nasa management has said we've accomplished about 90 percent of our objectives cbs news coverage will uh continue after this pause for station identification and space shuttle should uh have completed its de-orbit burn we expect in maybe 15-20 seconds to hear formally that that has been accomplished let's pick up now the voice of mission control to see whether that the orbit burn has been successfully completed [Applause] what's good okay that's super joe uh one that changed the plan of john's last weather flight indicated that our terrific news that is on top of those absolute terrific news the your uh runway and we'll make a landing on two three over faded out i understand that's uh runway 2-3 over

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that would be the first time the astronauts have heard that they are going to change runways yes a little more than 50 minutes now until the landing of the space shuttle the de-orbit burn has been completed the crew now changing the going through the change of attitude with the spacecraft to get ready uh for the tremendous heat and friction that the craft faces as it reenters the earth's atmosphere five minutes remaining in the past let's go to edwards air force base in california where walter cronkite and leo krupp are walter the wind seems to not have died down any has it picked up any i wouldn't say so it's been holding about steady the last time john young made a landing pass in that in that grumman uh orbiter test plane they use he got wind readings out there on the runway of 12 to 19 miles an hour or knots actually it translates roughly miles an hour and that's too much they decided for a first attempt at a crosswind landing with this orbiter so they've changed to the runway that'll bring them almost directly into the wind it makes it a much easier operation and a much safer one for the shuttle now it still means that they're going to have to take over controls a little bit more than had been anticipated perhaps because up the altitude where they have to make the turn they come in you know almost flying east they turn around and come back flying west to make their landing where they make that turn output about 25 30 000 feet it's blowing better than a hurricane force 90 knots of wind according to john young well at that speed of wind it means that the automatic control system would try to bank that plane a lot a lot sharper than otherwise to make that turn quickly enough before it's blown off course and banking like that at that speed at

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and banking like that at that speed at that point they're going about 600 miles an hour just short of the speed of sound as leo krupp has pointed out to us forces those men right down into the floorboard it pulls a g-force that's pretty heavy for the pilots but more than that it's more than the shuttle is built for the tolerance walter if i may i don't mean water and normally interrupt but if i may uh what are the chances that they will in the end uh rule out a manual controlled manually controlled landing and go to an automatic control landing well i think leo can answer that it's almost nil because as i was just trying to explain dan a automatic controlled landing with that turn would mean that the plane has to bank so sharply following the course around that the automatic landing is programmed for that they'd have a g-force against the plane that is greater than they want so instead joe engel flies the plane around that turn and banks much less sharply than otherwise but can cut across the turn blow out let himself be drifted out by the wind and still make the approach as planned is that right leo yeah that's right walter the auto land would probably pull around two g's it's really not too much for a pilot but it's more than we like to pull on the shuttle so joe will take over manually and he will lead turning onto that turn around the final so that he can let the wind drift him that way he doesn't have to bank as steeply as the auto land would bank him but once he gets around and gets lined up with the runway it's my guess that he will probably as soon as he acquires out of land guidance he'll center up the needles null everything out and he'll punch over to otto and he will accomplish the auto land test objective that we want to do and that's fly out of land from about ten thousand feet down to two thousand feet they just advised the astronauts of dan that the auto land system has not been ruled out and very probably will be ruled back in it was ruled out when they were going to make that crosswind landing on the other runway here now they're what they're telling them is that they'll probably go back to the auto land system now that

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back to the auto land system now that they're on the runway into the wind and no crosswind problems but they haven't advised them exactly of that as yet back to you dan and our cbs news coverage of the return of space shuttle two will continue after these messages do you know me i've taken ragtime to vienna and beethoven to kalamazoo and wherever i travel i use the american express card for the same reason i use stradivarius to apply for a card look for this display wherever the card is welcomed the american express card [Music] don't leave home without it the astronauts have completed the deorbit burn high above the earth's surface they are now trying to position the spacecraft for that tremendous heat and friction they must face as the earth's atmosphere begins to hit against the bottom of the spacecraft we're about roughly 15 minutes from the time that the astronauts go into their communications blackout we are about 44 and a half minutes away from the landing at edwards air force base in california martin dean has been covering the flight from the johnson space center in houston texas that of course is a place where the flight is controlled it's also the place where the astronauts train and mark been reporting on that too and on one occasion he actually went through some of the training program the correspondent arrives like a good soldier he has volunteered for this assignment the crew of the second shuttle flight arrives richard truly and joe angle they're here because they have to be it's part of their training in civilian life the plane is a 707 inside it's been converted to resemble a

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inside it's been converted to resemble a giant padded cell soon the work and the fun begin [Music] patrick it's like swimming in air or walking on air down is up and up is down there's no up or down in zero g how does it happen it happens by turning the plane into a roller coaster the plane rockets upward a 45 degree high speed climb to about 32 000 feet then it's throttled back and arcs over that's when zero gravity or weightlessness occurs while it's arcing over zero g lasts about 25 seconds and then the plane plunges plunges about ten thousand feet and then up we go again and there we go again whoa there we go again complete lightheadedness let's see the ball now the ball is going drifting off toward the camera man not a bad curve there and it feels as if your body just wants to fly off this chair the main purpose of these flights is for the astronauts to get used to working in zero g the shuttle crew engel and truly had specific tasks to perform during each period of weightlessness what did you learn today well we've been having a hard time we're getting in and out of the suit connecting the ring and so we're kind of curious on how a lot of the little things like loading the camera and uh putting some of these cameras together and eating some of the food in zero gravity that really works some of the equipment that we're taking along we were really curious to see just if there were anything that we ought to know about ahead of time be ready for when we got on on orbit because that's kind of expensive time up there

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kind of expensive time up there but mainly putting on and taking off the suit this type of flight is the only way for the astronauts to get a real feel for traveling in space without going there it's an unusual work environment for a cbs news crew cameraman pat o'dell sound band arnie jensen and my producer mark kramer here upside down and we're moving along with the greatest of these the plane did 50 50 of those roller coaster maneuvers on this flight up and down up and down up and down up and down for almost two hours but it is unusual there's nothing after doing that just like there's an act of getting in front of a tv camera and looking right into it but everybody keeps telling me even astronauts get sick sometimes joe engel and richard truly passed this test with flying colors and some of us were green with envy cbs news somewhere over or under the gulf of mexico guess what we noticed the green was not a case of videotape being out of synchronization there morton dean training with the astronauts astronauts truly and engel are in the spacecraft they've completed the deorbit burn they are trying to position the spacecraft and i can use our small model of the spacecraft to give you an indication of what they're trying to do they have been flying upside down and backwards as they came through that deorbit burn they are now trying to put the spacecraft and in the process of putting the spacecraft in roughly this position

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the spacecraft in roughly this position because remember as they come into the earth's atmosphere tremendous friction and force underneath here that's the reason they have these dark tiles all underneath the spacecraft so it doesn't burn itself up and they're positioning the spacecraft so when they come into the earth's atmosphere that this tremendous uh heat will be deflected as much as it can be at roughly uh this angle they're in the process of doing that now at about uh 53 minutes after the hour that would be um all in the order of maybe uh eight or nine minutes from now they go into a communications blackout now bonnie dunbar our astronaut uh one of the newer astronauts who has been helping us throughout this uh shuttle flight explain to us briefly why they go into this communications blackout what causes that how long it lasts and does it indicate any special danger well we go into a communication blackout for reasons that are very much associated with the heat we're generating so i can hold this up we're generating a lot of heat because we have friction against the atmosphere we have molecules of air that are essentially disassociating separating and that process is causing a communications problem we just simply can't communicate through that type of environment it's called a shield that's created it's about 12 minutes long there's no danger it's just that we can't communicate with them we'll have our last communication with him i believe right now through the guam station and then we'll next uh reach them probably through buckhorn coming into the united states let's explain that for just a second that they are roughly now in an area over the pacific ocean uh past indonesia and new guinea and their next communication main communication point uh that they'll be using is over guam then they'll go into the communications blackout period for how long about 12 minutes maybe 12 minutes and then the next communication we'll be hearing is when they're preparing for the actual landing at edwards air force base in california that's true

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that's true you didn't mention the danger i had said before that the silence the the 12-minute communication blackout doesn't indicate any special dangers to the astronauts no there are periods on orbit where we may not be inc in contact with the crew for as long as a half an hour or longer so uh there's no danger there in our cbs news coverage of the return of space shuttle two continues after these messages without overstating it the tension grows and the drama grows as the astronauts grow closer and closer to the time when they'll be landing at edwards air force base in california they're in contact with the guam communications point now they've removed the pins in their seats in the cockpit step necessary because if it became necessary for them to uh eject from the spacecraft they can only do that below one hundred thousand feet they'd have to have those pins out all of this part of their scheduled routine the next thing uh let's say the most important thing that will happen in the next few minutes is that they lose communications as uh astronaut bonnie dunbar explained for us just a few moments ago why they lose that communication as the spacecraft faces that tremendous heat and force against its bottom as it comes into the earth's atmosphere let's pick up we have about 34 and a half minutes to landing we have roughly five minutes to the time when the astronauts lose communications for about 12 minutes let's uh pick up some of the voices if we can from mission control in houston the scene that you're seeing now the machines and people at mission control in houston and see if we can pick up some of their conversations with the astronauts as the spacecraft re-enters the earth's atmosphere undergoes that tremendous force and heat that puts the tiles to the maximum test on the bottom of the spacecraft 20 seconds can you confirm whether the oex recorder was configured that prior to seat industry that's the voice of mission control uh i believe it was rick the voice of that's not joining we'll see you out of blackout and looking

[00:40:01 (https://www.youtube.com/watch?v=XLpqlHI_v80&t=2401s)](https://www.youtube.com/watch?v=XLpqlHI_v80&t=2401s)

see you out of blackout and looking forward to seeing you there 20 seconds to blackout time okay rick and we're pretty sure that the oex recorder is on okay thank you joe it's been about 20 minutes okay joe angle the flight commander in communication with mission control figure beginning to enter the blackout period 33 minutes until landing bomb has lost a signal columbia now 36 seconds away from entering the earth's atmosphere and 32 minutes 47 seconds away from landing at edwards air force base we're at 20 and a half minutes away from being able to talk to the crew again all three auxiliary power units up and running looking good as columbia passed out of range at guam the power level looked great the guidance officer said he saw a runway 23 selected into the crt on the instrument panel you can see perhaps in our animation uh that is an animated version we've had an update the men of courage and talent of colombia are going through at this moment in these seconds they are re-entering the earth's atmosphere well to me almost fantastic heat generated in the bottom of that spacecraft they'll be out of contact now for another uh roughly 12 minutes as they out of communication no way to get any communication either way either mission control to them or they to mission control

[00:42:00 (https://www.youtube.com/watch?v=XLpqlHI_v80&t=2520s)](https://www.youtube.com/watch?v=XLpqlHI_v80&t=2520s)

to mission control as they go through uh that period of uh just an enormous heat to get themselves uh through and into the earth's atmosphere headed for their landing at edwards air force base in california uh out over the pacific ocean at the moment and now that we're in the blackout period let's go to the johnson space center in houston morton dean and astronaut uh paul weitz dan this is truly a great test of whether those tiles are indeed reusable the 30 000 tiles that will keep the astronauts cool paul when you were on skylab and you've begun to come through what we all call the fiery reentry do you sense the fire do you see it well let me uh things are a little different using the apollo system because remember we really re-entered the atmosphere back in first so that we were looking in the direction from which we were coming mort and consequently the entire ion sheath was flowing up around in front of our windows and we could see it even in the daylight what did it look like oh it's beautiful it was a very tenuous uh pink color and it changed as you got deeper into the atmosphere it went from a pink into an orange and even at times red i remember talking to uh crippen and young when they came back from their first flight and they did say that they could see i believe an orangy like glow around the tip of the spacecraft yeah what's different about this one is that it's coming in like an airplane so you're coming in nose first looking out the front end where most of of this beautiful ion wake then is going to be behind you which you can't see and john said that as long as they were in darkness which they are now that they could see this glow this faint rosy glow around the uh orbiter gradually increased but that as soon as they came into sunlight it was so tenuous that they could no longer make it out there according to my understanding is a symphony of special sounds when you're in a spacecraft what did you hear i know crippen and young said they did hear some

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young said they did hear some creaking and and squeaking type sounds well this is a much larger vehicle and you would expect that as you got the thermal transients across the vehicle in the apollo command service module command module which we re-entered it's a relatively small vehicle and there really was was no sensible change outside of changes as equipment and pumps came on and shut down inside the vehicle okay thank you paul dan thank you very much morton dean and paul white's bonnie dunbar astronaut here in houston you were explaining to me that as the spacecraft is in roughly this attitude now that the maximum heat is up in this area of the of the nose cone there are several areas of peak heating but actually around the nose cap which is called reinforced carbon carbon it's produced by vaught for uh nasa sees about 2700 degrees fahrenheit about 2300 degrees fahrenheit on the uh bottom and then other say that again 2700 degrees fahrenheit is the heat on that spacecraft right now capable of seeing about that temperature and they're up at about 340 000 miles above the earth's surface where cronkite is at the landing site at edwards air force base in california walter they're experiencing right now dan that fireball effect uh their uh their spacecraft would seem to them to be in the middle of a great fireball as they come back into the earth's atmosphere and of course here they're waiting anxiously for the word that they've come through the blackout period uh and and are in good shape that will come in about another 19 or another 14 minutes from now out here at edwards air force base all is in readiness some of the clouds have even disappeared and it's a little clearer than it was just an hour ago when we took air the wind is still very strong but they've decided now they're coming in into the wind and the crosswind should give them no problems upon the actual touchdown it still will give them a problem at altitude as they make the 180 degree a little more than that horseshoe turn they've got to make at an altitude of some 25 or 30 000 feet

[00:46:00 (https://www.youtube.com/watch?v=XLpqlHI_v80&t=2760s)](https://www.youtube.com/watch?v=XLpqlHI_v80&t=2760s)

at an altitude of some 25 or 30 000 feet some six miles down range from here they come over the base go down and make that turn at that point that wind is going to want to force them on off course and that's when joe ingo is going to have his work cut out for him out there on the base a couple hundred men who are ready to rush to the side of the spacecraft just as soon as it comes to a stop on this dry desert lake bed and at that point they will test for all of the gases that could be venting from the craft to be sure it's safe to go aboard and to open up and let the astronauts out maybe a half hour to an hour after they actually get on the ground all's in readiness at edwards air force base the the visibility is better than had has been all morning the winds are still very strong back to you dan walter uh i know that at your side there is leo krupp and i wonder after he talked to the astronaut uh pilots of the columbia after the first space shuttle flight did they experience any special difficulties as they came back into the earth's atmosphere and face that that orange glow and that tremendous heat what did they talk about that was going through their heads and hearts at that time does leo know well dan they didn't uh they noticed a lot of things you know they were all a bunch of sightseers and they got a real big kick out of the fact when they crossed the coastline and you could see the the ground zipping past and the clouds and everything and uh but they had no ill effects whatsoever and the only real comment they had that i think is significant that we're going to put to rest today is that john young complained that the weather conditions at landing were so smooth there was no wind it was absolutely calm it was a perfect day and he complained that if if the flight control system if there was anything wrong with the flight control system he wouldn't know it because the conditions were so benign now today i'll grant you that joe engel is going to know if there's anything wrong with that flight control system because it is really blowing out here it's gusting to 25 knots and he's going to have some problems uh

[00:48:02 (https://www.youtube.com/watch?v=XLpqlHI_v80&t=2882s)](https://www.youtube.com/watch?v=XLpqlHI_v80&t=2882s)

and he's going to have some problems uh if the flight control system doesn't function properly he'll he'll know it dan it also might be pointed out that as far as what they're experiencing right now both of these men engel and richard truly are experiencing it for the first time whereas the pilot john young the commander of the last flight had been come back through that same atmospheric fireball situation and blackout i think seven times before or six times something like that thank you very much uh walter cronkite and leo krupp at the edwards air force base in california bonnie dunbar very quickly because we do want to get to it to a station break is there a way of monitoring the tiles now now that the tiles are under their their maximum test on the bottom of that spacecraft is are there machines electronic equipment in houston monitoring how well they're holding up during blackout there's essentially no communication however we have onboard data collectors we're recording information for post-flight analysis and of course as soon as we come out of the blackout period period we'll be getting a thermocouple temperature readings down on the ground and the spacecraft is uh rapidly uh coming down to earth now but it's roughly what 300 thousand feet above the earth's surface maybe a little less than that at the moment i think it's probably down around 250 000 feet just as as a guest we've gone through the peak heating going through the peak we should be entering the end of it and our cbs news coverage of the return of space shuttle 2 will continue after this pause for station at about 250 000 feet above the earth surface astronauts engel and truly are angling the spaceship columbia the second space shuttle toward the edwards air force base in california where the winds are high and where it's going to be a tricky landing we are roughly seven minutes away from the end of the communications blackout period a blackout period forced by the tremendous heat and other

[00:50:00 (https://www.youtube.com/watch?v=XLpqlHI_v80&t=3000s)](https://www.youtube.com/watch?v=XLpqlHI_v80&t=3000s)

forced by the tremendous heat and other factors as the spacecraft comes into the earth's atmosphere which has been doing now for about the past eight minutes we're roughly seven minutes away from the end of the blackout period we're roughly 21 minutes away from the landing at edwards air force base if all goes well the landing should take place at about 22 minutes past the hour as we await the end of the blackout morton dean and astronaut paul weitz are in houston mort dan uh again we're sitting in a we've just made a quick re-entry ourselves we're sitting in one of the um shuttle trainers here at uh the johnson space center paul i'd i'd like to know uh just how many flights engel and truly have actually made into that runway i would imagine test flights would be in the hundreds between the beginning of their training and today well don't forget the thing that's in their advantage mort is they have actually flown uh the orbiter not the one they're in now but the one previous to that on the alt the approach and landing test program and have made as a crew two previous approaches and landings at edwards let me just explain the alt was when the shuttle was flying piggyback on a 747 and was jettisoned off and they did fly it you're right i forgot all about that that's correct plus if uh i don't know if the program has showed that some of the approaches that john young was making earlier in a shuttle training aircraft and both dick and joe have made many many you were correct in that assumption hundreds of approaches to the lake bed under various uh lighting conditions different sun angles different wind conditions well what are they doing right now they're they're kind of uh nose up now aren't they they're not uh twisted around as we are that's correct obviously their their attention is at uh on the task before them they're paying attention to what they're seeing on on the screens and on the indicators and uh the maneuvers that i had previously mentioned to determine the aerodynamic qualities of this machine are being flown now some of them automatically by the computers and some by manual inputs by joe angle a real test of the shuttle and of course

[00:52:00 (https://www.youtube.com/watch?v=XLpqlHI_v80&t=3120s)](https://www.youtube.com/watch?v=XLpqlHI_v80&t=3120s)

a real test of the shuttle and of course we must emphasize paul and dan and bonnie and walter and leo that this is indeed a test mission one of four uh before the big operational missions begin dan thank you very much morton dean and astronaut paul white's uh in houston we are approximately five minutes from the end of the communications blackout time but we're about seven minutes from the actual resumption of communications because keep in mind when the blackout actually ends the spacecraft is not in a position to communicate with any particular place on earth and it would be another couple of minutes after the blackout ends before communications will actually be heard this is a moment of tension and yes some drama because we haven't heard from the astronauts for a few minutes now no indication that anything is wrong at all so five minutes uh until the end of blackout roughly seven minutes to resumption of communications and about 19 minutes until the landing at edwards air force base in california our cbs news coverage of the return of the space shuttle will continue in just a moment we are roughly three minutes away from the end of the blackout period the forced blackout period for the astronauts about five minutes away from actually hearing their voices because they have to once they're out of the blackout period reestablish communication with an earth ground station the next one they'll be re-establishing communication with is the buckhorn ground station in california roughly 17 minutes away from landing the landing at edwards air force base scheduled for 22 minutes after this hour we've mentioned before we'll mention again could be an especially a tricky dangerous landing for the astronauts at edwards air force base partly because the wind is up there rather high the astronauts already have been informed that they've had a change in the landing strip that they'll be using at edwards air force base of course one of the reasons that nasa has chosen this area as the prime landing spot is because there is so much space out there on that desert floor a desert floor that's been used over the years for among other things the making of john wayne movies

00:54:01 (https://www.youtube.com/watch?v=XLpqlHI_v80&t=3241s)

of john wayne movies but as far as the space program is concerned it's an ideal landing spot of the spacecraft because it allows for such a wide margin for era you'll remember the first time the space shuttle came down it was a picture-perfect landing as you can see on our running clock of 15 roughly 15 and a half minutes until landing time a little over two minutes until the blackout period ends maybe a little less than that and about uh four minutes perhaps a little less than that until we hope to re-establish communications with the astronauts mission control is uh speaking not to the astronauts at the moment but uh to all assembled let's just pick up a few of those turn the line up with the runway at about forty thousand feet duangle will fly this manually control stick steering then uh he will go to the automatic landing system taking back over manually at about two thousand feet just prior to pre-flare mission control explaining the procedure that joey will be using it'll be a combination of manual uh and automatic uh controls for landing but uh the plan remains for joe ingle to uh land it manually as was the case uh last time the first time that the space shuttle came down astronaut bonnie dunbar with me here in our new york studios bonnie at this moment the astronauts would be doing what and again the attitude of the space shuttle is uh roughly this their altitude is something less than 200 000 feet at the moment that's true we're probably about 180 000 feet and i demonstrated the 40 degree angle of attack earlier which is held constant pretty much through the thermal control phase this will ramp down to about 14 degrees as was mentioned earlier for the terminal area energy management period i'm told that we have radar contact radar contact at about a hundred and eighty eight thousand feet uh we the astronauts are not yet out of their blackout period although we expect them to be out uh just uh well almost any moment now but

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just uh well almost any moment now but it'll be a couple of more minutes before uh according to the schedule that actual communications will be uh re-established with them we have uh an animated look at the landing procedure at edwards air force base so perhaps so we could take a look at that bonnie uh perhaps you'd want to narrate the plan for the landing in high wind well again they'll be coming into runway 2-3 they'll come circle around as you see if he's coming it's called a hack heading alignment circle flaring down pre-flaring and landing the initial angle coming in there is about 19 degrees when you land commercially it's more like two and a half degrees what about the speed bonnie when we land uh in a commercial airliner the speed of the airliner is what a little over 200 miles an hour well actually uh in a 727 it's probably less than that and you'll be landing the orbiter landing around 200 miles an hour about 212 miles an hour but i think what's really significant is that as you approach this runway in the shuttle you're dropping it about 10 000 feet per minute whereas a normal aircraft it might be 500 feet per minute before you flare out the animation gave us a little bit of feel of that that this is a very large spacecraft and drops like a rock let's pick up the voice of mission control at the moment configure aos you're about 25 miles south of ground track your nav is good your energy is good we'd like you to check your attack in mls and radar altimeters on over okay okay rick good to hear you and we're showing 10.5 mark and 165 000 feet now the astronauts back in contact with mission control and did you get my call on the navi okay we got the car on the navy roger everything's looking good your energy is very good the nav is good out of 154 000 at 9.8

00:58:03 (https://www.youtube.com/watch?v=XLpqlHI_v80&t=3483s)

the astronauts have been through the deorbit burn they've been through their blackout period they're back in communications now range now 350. roger the spacecraft is nearing the coast of california part of the energy management and rick the maneuvers have been going very good the bird is real solid good solid bird all the way well we love hearing it and we requested gnc io reset to bring the mls's into the software over welcome and what a site the astronauts should have as they enter the coast of over the coast of california in the big sur country up there uh how much of that will they actually be able to see bonnie dunbar it depends a little bit on cloud cover and i don't have enough information around that area there was some this morning but they'll still have a pretty 143 000 feet keep in mind that the astronauts have no way of getting out of that spacecraft alive until they reach a hundred thousand feet and below they could eject if they had to feed through the computer okay back to auto pti-2 is selected roger mach 7.4 send your gopher tack in right we cannot tactical air navigation information now being fed into being as you look at the faces of mission control one is reminded how many hundreds of thousands of people have poured their skill work on care shortly into this space shuttle project across the with just approximately 10 minutes before uh

[01:00:01 (https://www.youtube.com/watch?v=XLpqlHI_v80&t=3601s)](https://www.youtube.com/watch?v=XLpqlHI_v80&t=3601s)

minutes before uh time to land at the edwards air force base in california landing still scheduled for roughly 22 minutes after the hour let's go to edwards air force base and walter cronkite along with leo croft walters about now beginning to converge on the nominal ground track everything seems to be going exceedingly well you just heard the mission control say it's a great bird things are going fine they're just south of san luis obispo just about over san william bispo on the coast here now another minute they'll be south of bakersfield they're descending rapidly they're at about 120 5000 feet now and going around six mach that's six times the speed of sound another minute they'll be over bakersfield or south of it at 103 000 feet 2500 miles an hour and then we're going to down here uh hear a sonic boom we hope we can pick it up for you this time as the spacecraft passes right over us at about 50 000 feet right over our anchor position here at edwards air force base that comes just about three minutes before the end of the flight or around one something like that pacific time and another in other words another 14 minutes from our what nine nine eight or nine minutes from now leo the everything's gone well as a spacecraft now the uh the orbiter gets its real test does it fly like an airplane uh that test is coming just now and in the next ten minutes we'll know and of course we expect it to uh it's going to be a tough landing as leo said before much much rougher than the first one we've the wind has come up here on the ground at 25 knots that's 20 around 25 miles an hour what it is up there where he's got to make that critical turn at around 25 30 000 feet we haven't heard lately but a little while ago when on young uh ran a test flight through there it was at 90

[01:02:01 (https://www.youtube.com/watch?v=XLpqlHI_v80&t=3721s)](https://www.youtube.com/watch?v=XLpqlHI_v80&t=3721s)

a test flight through there it was at 90 miles an hour so he's going to be flying a bird with no power at all a dead stick landing that used to be called in the days of the quiet birdman walter pardon me for interrupting but i think on the screen we can see the orbiter now i believe you can you can indeed you can indeed say again the boots are coming out now at three point four and second your last position that picture dan is from uh santa inez it's a long range camera uh it's got it out there a long way away yet but you do see just a spot occasionally and of course that orbiter will be getting much larger very quickly he's still proceeding at a speed range of 74 miles 20 000 feet that's a from the chase plane the chase planes are up there high and i believe that photograph of the space orbiter itself came from one of those chase planes there is a sorry go ahead welcome i think that first stop roger we're looking at it i believe those shots are from santa ynez camera dan it's a long-range camera mounted just inside the coast on one of the mountain ranges here take the air data welcome well from wherever the shot came what a welcome shot it was and uh i'm not ashamed to say so what a thrill it was even though we've seen it before to see that spacecraft come back into sight uh and with everything working fine and the astronauts uh uh hearing their the voice of joe engel the you're pilot to chase plane pictures now of course dan and there is a woman astronaut kathy sullivan in one of the two chase planes uh that meet colombia at about 35 000 feet oh and we have a wind update for you and a weather update uh you've got a very thin layer at 25 000. the winds airborne are as brief and on the ground

[01:04:02 (https://www.youtube.com/watch?v=XLpqlHI_v80&t=3842s)](https://www.youtube.com/watch?v=XLpqlHI_v80&t=3842s)

airborne are as brief and on the ground two two zero eighteen not gusting to two four altimeters three zero decimal zero seven you got sixty miles of his underneath walter in that picture you can you certainly get a sense of how the arbiter is hurtling down toward earth yes it's flying like an airplane but with that weight uh and speed uh how it is hurtling toward edwards air force base he descends about 9 000 feet in the very last part of the maneuver in just a matter of seconds we should be getting the sonic boom here in about another 20 30 seconds let's listen for it leo crook continuing to fly the test maneuver roger a state vector transfer pass to bfs thank you very much 50 000 feet mach 1 range 27 miles dan it's incredible we can see that with a naked eye roger you're tracking right down the line that's incredible he's right overhead from us wow sounded like somebody let off 155 millimeter howitzer right under 22 mile tree let me houston we show you intercepting

01:06:01 (https://www.youtube.com/watch?v=XLpqlHI_v80&t=3961s)

let me houston we show you intercepting the hack and a reminder you've got the strong winds out of the west now out of 38 000 feet intercepting the hack that means that's where he has to start his turn it's where he's taking control flying that airplane zero around but not too much that's the last pti he had to get that in before he could go manual what an incredible talent it takes to fly this large orbiter at this speed and how many years of experience it takes to do it i'll be making a wide sweeping turn now to get lined up with the runway good television picture 25 000 feet i'm houston about 3000 feet low now out of 24 000 feet roger and chase we're showing 290 at 20 000. okay we're about to be with you 280 knots at 18 000 feet at this point he's trying to see him with the naked eye at a degree of about 19 19 degrees down coming down fast at 2 000 feet he'll begin to flare out roger's still just slightly low on the energy looking okay that's the camera that's jiggling not the spacecraft nine miles range at thirteen thousand below the glad slope you have a gopher auto land okay rick thank you sir i'm serious about being below the glide slope uh leo that's not serious at all and

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uh leo that's not serious at all and he's been cleared to engage auto land as soon as he he got the needle centered now he's he's on auto he's letting the idle land runner system slide down to 2000 feet then he'll take over manually again do a manual landing touchdown and roll out he's now completed his uh turn through the through the uh dangerous wind buffeting so he's coming in directly into the wind and he's good shape right that's right there's next speed brake auto okay speed brake body flap auto everything's all thank you i anticipate he won't roll out near as far as john young did because uh with this strong wind he'll he'll stop much shorter than the intersections of the runway away from touchdown it's the second time man has done it but what a sight it is to see a spacecraft come landing here like an airplane it is an airplane now no power of its own a very tricky landing unpowered 75 ton airplane landing at two or three times the speed of a dc-9 which is its size counterpart but a remarkable and thrilling sight 3500 feet the clouds cooperated here 2500 feet speed ranks are closed for 270 knots he's got he's got the brakes closed because of this high wind he's a little low on energy so he closed the speed brakes earlier okay this is the end of a 5 000 there comes wheels there come his wheels leo wheels down that's that was the last critical function really get those wheels down 30 20 10 5 3 touchdown

01:10:02 (https://www.youtube.com/watch?v=XLpqlHI_v80&t=4202s)

5 3 touchdown 15. how about that now what what a beautiful landing this is critical when the nose slaps over joe's letting it down nice and easy thank you chase that was beautiful you got a good picture of those brakes right now leo though those aileron brakes the split rudder are the speed brakes the unofficial touchdown time and mission elapsed time is two days six hours 13 minutes 10 seconds space shuttle 2 is down safely with astronauts down three days earlier than was originally scheduled because of a faulty fuel cell one of the three fuel cells developed trouble and had to be shut off but most if not all of the scientific experiments and experiments with spacecraft itself for which the flight was designed were accomplished dan dan i i think that we can say also that this mission accomplished something else it proved again uh and better than ever before how flyable the orbiter is as a spacecraft wouldn't you say leo i don't think there's any doubt about it coming through that very high wind he had to uh encounter in making that critical last turn uh everything worked the energy level was kept high enough the meaning that he could get into his landing despite the

checklist the high winds and uh they made a perfect landing despite it it just is another proof that we've got quite a machine here for the united states also dan there's one thing we should point out that there's a critical period right now as uh you reported here from the first landing uh the plane builds up an awful lot of

[01:12:01 (https://www.youtube.com/watch?v=XLpqlHI_v80&t=4321s)](https://www.youtube.com/watch?v=XLpqlHI_v80&t=4321s)

uh the plane builds up an awful lot of vapors and so forth that are highly dangerous and until they get those cleared away uh the flight of the orbiter is not uh completely successful no reason to believe there will be any trouble but there are a few more minutes now of some tenseness here now back to you damn quarter to be at least 30 minutes before the crew finishes its post flight procedures and actually leaves the spacecraft so let's now take another look at their breathtaking landing of just a few moments ago we'll roll the videotape and take a look you're ready to copy these changes okay just a second then spacecraft with the chase plane right at its tail you see a piece of this part of the chase plane from time to time back there the camera in the other space plane juggling just a little the winds high much higher a much

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END